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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,071	08/20/2004	Govindarajan Natarajan	FIS920040062US1	5070

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LAW OFFICE OF DELIO & PETERSON, LLC.
121 WHITNEY AVENUE
NEW HAVEN, CT 06510

EXAMINER

RAMDHANIE, BOBBY

ART UNIT	PAPER NUMBER
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1797

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/711,071	Applicant(s) NATARAJAN ET AL.	
	Examiner BOBBY RAMDHANIE	Art Unit 1797	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2008.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>06/02/2008</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 17 recites the limitation "the method" in Claim 15. There is insufficient antecedent basis for this limitation in the claim. The Examiner will examine Claim 17 as if it were dependent on Claim 16.

4. Claims 13-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear to the Examiner as to what determines a horizontal opening to be a "selected one" from a plurality of horizontal openings.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Burdon et al (WO/0021659).

7. Applicants' claims are toward a plate.

8. Regarding Claims 1-5, Burdon et al discloses the ceramic micro well plate comprising: A). A first ceramic greensheet; at least one vertical opening in said first ceramic greensheet, said vertical opening in said first ceramic greensheet being a reaction chamber of said micro well plate (See Figure 43 Item 1652); a second ceramic greensheet; at least one vertical opening in said second ceramic greensheet that is aligned with said at least one vertical opening in said first ceramic greensheet (See Figure 43 Item 1652); and an optical micro plug in said at least one vertical opening in said second ceramic greensheet, whereby said optical micro plug allows viewing of said reaction chamber of said micro well plate (See Figure 43 Item 1668).

Additional disclosures Included: Claim 2: Wherein said first and second ceramic greensheets are laminated to one another (See Page 10 lines 17-20); Claim 3: wherein said first and second ceramic greensheets are sintered greensheets (See Page 5 lines 26-29); Claim 4: Wherein said optical micro plug comprises an optically effective material selected from the group consisting of PDMS, PDMS plus a low concentration of capture molecules, glass, silica, ceramic, polymer and combinations thereof (See Page 63 lines 17-24); and Claim 5: Wherein said optical micro plug comprises a lens (See Figure 42 Item 1668, glass inherently comprises a lens).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 6-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burdon et al.

12. Applicants' claims are toward a plate.

13. Regarding Claims 6, 7 & 8, Burdon et al discloses the ceramic micro well plate of Claim 1, except for wherein said optical micro plug comprises a magnet, a sensor, or marker molecules residing therein having high affinity to their target for identification and quantification of said target. Burdon et al does however disclose the modification of the thick pastes which are used to make the plug to contain thermoelectric, piezoelectric, and high magnetic permeability materials to be incorporated into the device. Burdon also discloses the use of magnets, resistive sensors, and magnetic microspheres, which can be used for the quantification of materials of interest (See Page 10 lines 7-16). It

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would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the plug with all or any of these materials and components because Burdon discloses that the plug is made from the thick paste which may possess materials that may have plug to contain thermoelectric, piezoelectric, and high magnetic permeability properties.

14. Additional Disclosures Included: Claim 9: The ceramic micro well plate of claim 1 wherein said optical micro plug comprises a conductive optical micro plug (See Page 10 lines 10-11); Claim 10: The ceramic micro well plate of claim 1 wherein said optical micro plug comprises a non-conductive optical micro plug (See Page 19, lines 18-19; glass is non-conductive); Claim 11: The ceramic micro well plate of claim 1 wherein said optical micro plug comprises a heater (See Page 10; lines 14-16); Claim 12: The ceramic micro well plate of claim 1 wherein said optical micro plug comprises a cooler (See Page 10; lines 14-16; thermoelectric elements may comprise either a heater or a cooler).

15. For Claims 13-20, Burdon et al discloses the ceramic micro well plate comprising: A). A first ceramic greensheet (See Figure 42); B). a first plurality of vertical openings in said first ceramic greensheet, said first plurality of vertical openings in said first ceramic greensheet being a plurality of reaction chambers (See Figure 42, there are two openings which are in the first greensheet capable of being a reaction chamber); a second ceramic greensheet (See Figure 42); a horizontal opening in said second ceramic greensheet, selected one horizontal opening connecting selected ones of said first plurality of vertical openings (See Figure 42); C). A third ceramic greensheet

(See Figure 42); a second plurality of vertical openings in said third ceramic greensheet aligned with said first plurality of vertical openings in said first ceramic greensheet (see Figure 42); and a plurality of optical micro plugs in said second plurality of vertical openings (See Figure 43 Item 1668), said optical micro plug aligned with said first plurality of vertical openings to allow viewing of said reaction chamber of said micro well plate. Burdon et al does not disclose one ceramic micro well plate with the plurality of horizontal openings. Burdon et al does however disclose the use of a plurality of horizontal openings (a single horizontal opening for each greensheet; See Figure 38). Burdon et al also discloses the use of a thick paste which may be sintered along the surfaces of the channels that act like optical widows or fibers to each section (See Page 21 lines 25-26 & Page 51 lines 8-17). Burdon et al still further discloses the use of these thick pastes a plugs for the magnets, heaters, coolers, and other components being sintered onto the internal surfaces of the openings for various applications (see Figures) It would have been obvious to one of ordinary skill in the art to modify the single horizontal opening to extend outward in either direction, to form a plurality of horizontal openings as a matter of a design choice since the Burdon et al discloses variations of the horizontal openings can be successfully accomplished (See Figure 38).

16. Additional Disclosures Included: Claim 14: The ceramic micro well plate of claim 13 wherein said plurality of optical micro plugs comprise a transparent material selected from the group consisting of PDMS, PDMS in combination with capture molecules, glass, silica, ceramic, polymer and combinations thereof (See Page 63 lines 17-24); Claim 15: The ceramic micro well plate of claim 13 wherein said plurality of optical micro

plugs are selected from the group consisting of optical micro plug lenses, optical conductive micro plugs, optical non-conductive micro plugs, optical micro plug heaters, optical micro plug coolers, optical micro plug magnets, optical micro plug sensors and combinations thereof (See Figure 42 Item 1668, glass inherently comprises a lens & (See Page 10 lines 7-16).

17. For Claim 16, Burdon et al discloses the method of forming a ceramic micro well plate comprising: A). Providing a first ceramic greensheet (See Figure 42); B). Forming a first plurality of vertical openings in said first ceramic greensheet, each of said first plurality of vertical openings in said first ceramic greensheet being reaction chambers of said micro well plate (See Figure 42); C). Providing a second ceramic greensheet (See Figure 42); D). Forming a second plurality of vertical openings in said second ceramic greensheet; aligning said first plurality of vertical openings in said first ceramic greensheets with said second plurality of vertical openings in said second ceramic greensheet (See Figure 42). Burdon et al does not disclose depositing an optically effective material into said second plurality of vertical openings in said second ceramic greensheet to form a plurality of optical micro plugs, whereby said optical micro plugs allow viewing of said reaction chambers of said micro well plate. Burdon et al does disclose however placing optical micro plugs in the inside of the horizontal opening in Figure 42. Burdon also discloses other variations of placement of optical micro plugs such as the vertical opening of the second greensheet in Figure 43 Item 1668. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Figure 42 with depositing an optically effective material into said second

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plurality of vertical openings in said second ceramic greensheet to form a plurality of optical micro plugs, whereby said optical micro plugs allow viewing of said reaction chambers of said micro well plate because Burdon et al already shows it can be done with a plurality of micro optical plugs.

Additional Disclosures Included: Claim 17: The method of claim 16 further including the steps of: A). Providing a third ceramic greensheet; forming a plurality of horizontal openings in said third ceramic greensheet; and positioning said third ceramic greensheet between said first and second ceramic greensheets such that selected ones of said plurality of horizontal openings connecting selected ones of said first plurality of vertical openings while said plurality of optical micro plugs are aligned with said first plurality of vertical openings being said reaction chambers (See Figure 38 in view of Figure 42 or 43); Claim 18: The method of claim 16 further including laminating said first and second greensheets to form said micro well plate having said plurality of optical micro plugs (See Page 10 lines 17-20); Claim 19: The method of claim 18 further including sintering said laminated first and second greensheets to form said micro well plate having said plurality of optical micro plugs (See Page 5 lines 26-29); Claim 20: The method of claim 16 wherein said formed plurality of optical micro plugs are selected from the group consisting of optical micro plug lenses, optical conductive micro plugs, optical non-conductive micro plugs, optical micro plug heaters, optical micro plug coolers, optical micro plug magnets, optical micro plug sensors and combinations thereof (See Figure 43 Item 1668 in view of Page 10 lines 7-16).

Telephonic Inquiries

Although no other rejections are being made at this time, the Examiner would like to bring to the attention of the applicant several other relevant prior art references that the Applicant has submitted:

Briscoe et al (WO01/41931); Briscoe et al discloses the ceramic micro well plate comprising: A). A first ceramic greensheet; at least one vertical opening in said first ceramic greensheet, said vertical opening in said first ceramic greensheet being a reaction chamber of said micro well plate (See Figure 3 Item 104); a second ceramic greensheet; at least one vertical opening in said second ceramic greensheet that is aligned with said at least one vertical opening in said first ceramic greensheet (See Figure 3 Item 102); and an optical micro plug in said at least one vertical opening in said second ceramic greensheet, whereby said optical micro plug allows viewing of said reaction chamber of said micro well plate (See Figure 3 Item 294).

Burdon et al (EP1314472); Burdon et al discloses the ceramic micro well plate comprising: A). A first ceramic greensheet; at least one vertical opening in said first ceramic greensheet, said vertical opening in said first ceramic greensheet being a reaction chamber of said micro well plate (See Figure 43 Item); a second ceramic greensheet; at least one vertical opening in said second ceramic greensheet that is aligned with said at least one vertical opening in said first ceramic greensheet (See Figure 43); and an optical micro plug in said at least one vertical opening in said second

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ceramic greensheet, whereby said optical micro plug allows viewing of said reaction chamber of said micro well plate (See Figure 43 Item 1668).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BOBBY RAMDHANIE whose telephone number is (571)270-3240. The examiner can normally be reached on Mon-Fri 8-5 (Alt Fri off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bobby Ramdhanie, Ph.D./
Examiner, Art Unit 1797
/B. R./

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